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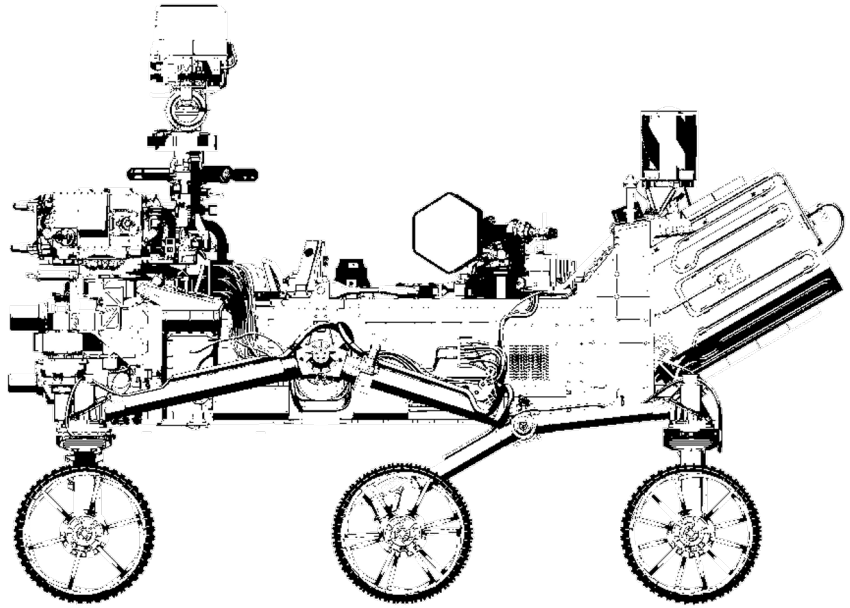
The Mars 2020 (M2020) Mission Control System

Quentin Sun

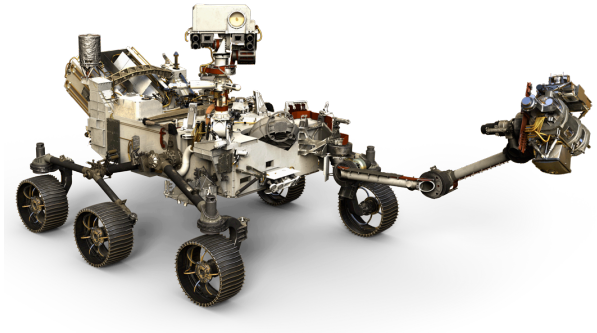
Reynaldo Lopes-Roig

Navid Dehghani



The M2020 Mission

- **Mars 2020** is a Mars Rover mission by NASA's Mars Exploration Program.
  - Planned launch on 17 July 2020
  - Touch down in Jezero crateron Mars on 18 February 2021.
- It will investigate an astrobiologically relevant ancient environment on Mars and investigate its surface geological processes and history, including the assessment of its past habitability, the possibility of past life on Mars, and the potential for preservation of biosignatures within accessible geological materials.
- It will cache sample containers along its route for a potential future return.



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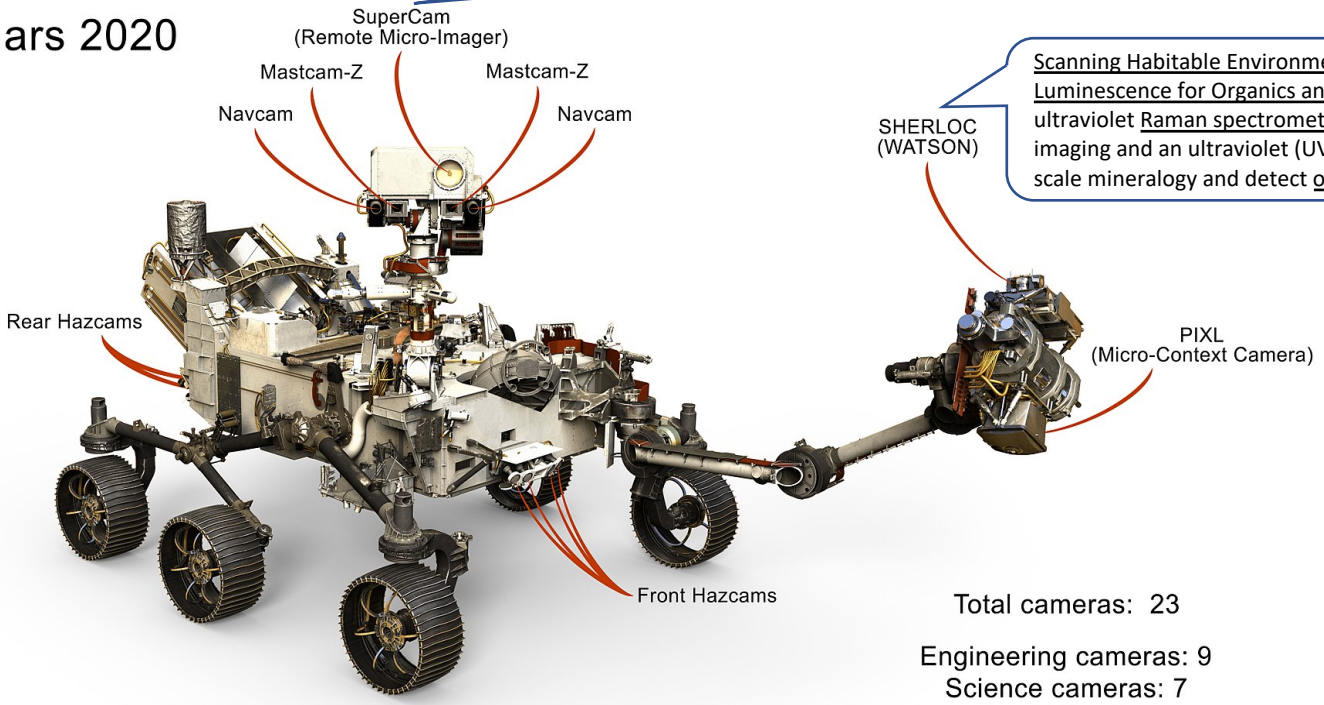
The M2020 Rover and Instruments

SuperCam, an instrument suite that can provide imaging, chemical composition analysis and mineralogy in rocks and regolith from a distance

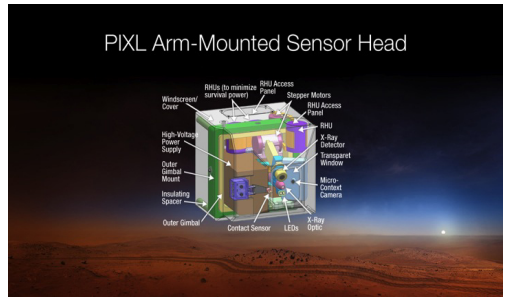
Mars 2020



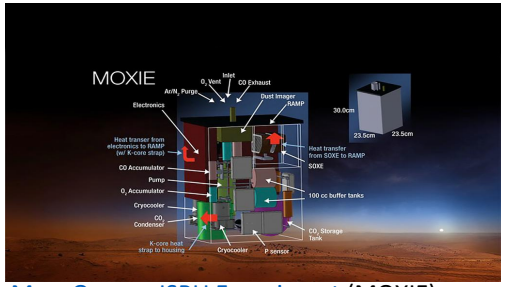
Scanning Habitable Environments with Raman and Luminescence for Organics and Chemicals (SHERLOC), an ultraviolet Raman spectrometer that uses fine-scale imaging and an ultraviolet (UV) laser to determine fine-scale mineralogy and detect organic compounds.

Total cameras: 23

Engineering cameras: 9
Science cameras: 7
Entry, descent and landing cameras: 7

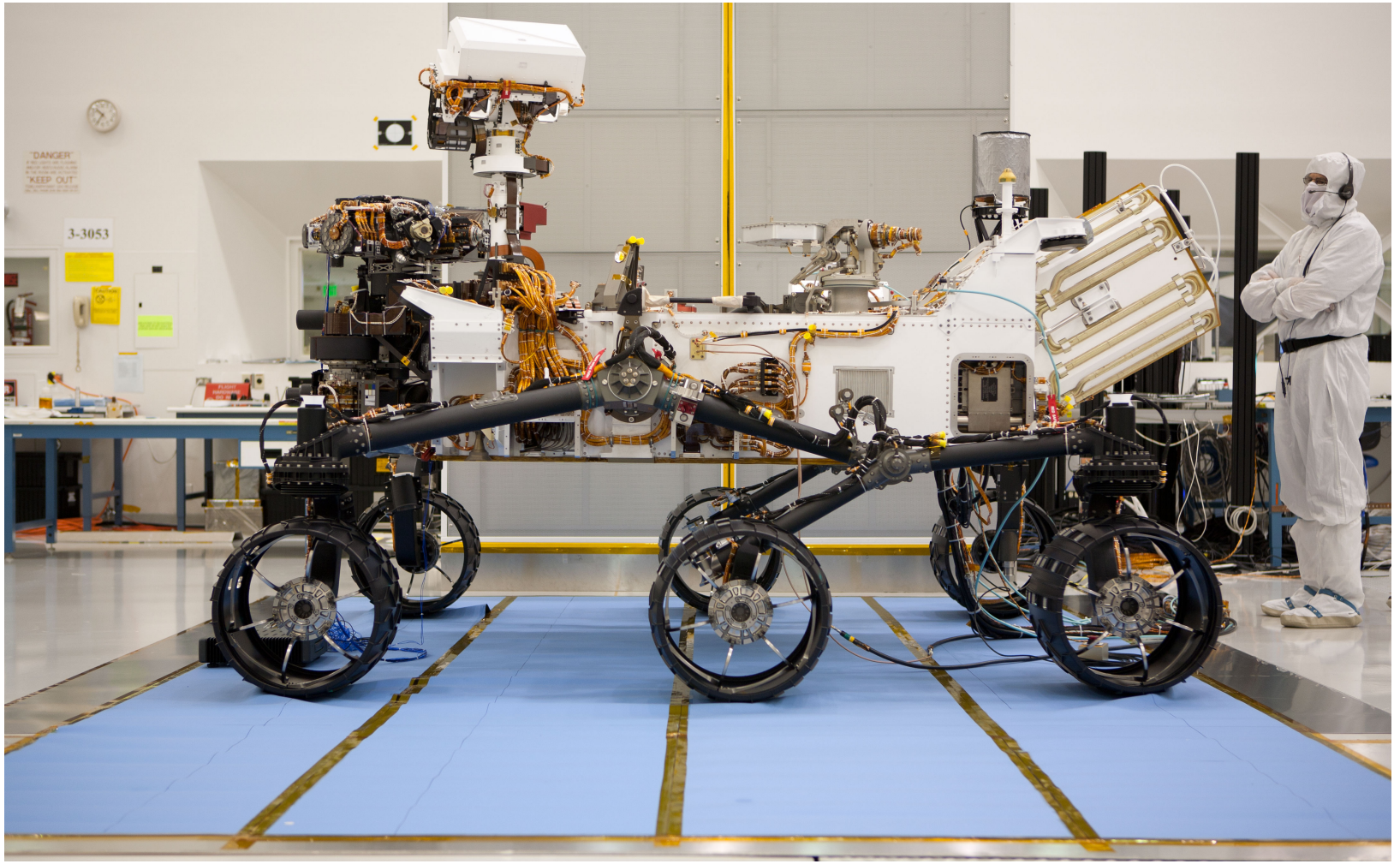


Planetary Instrument for X-Ray Lithochemistry (PIXL), an X-ray fluorescence spectrometer to determine the fine scale elemental composition of Martian surface materials.

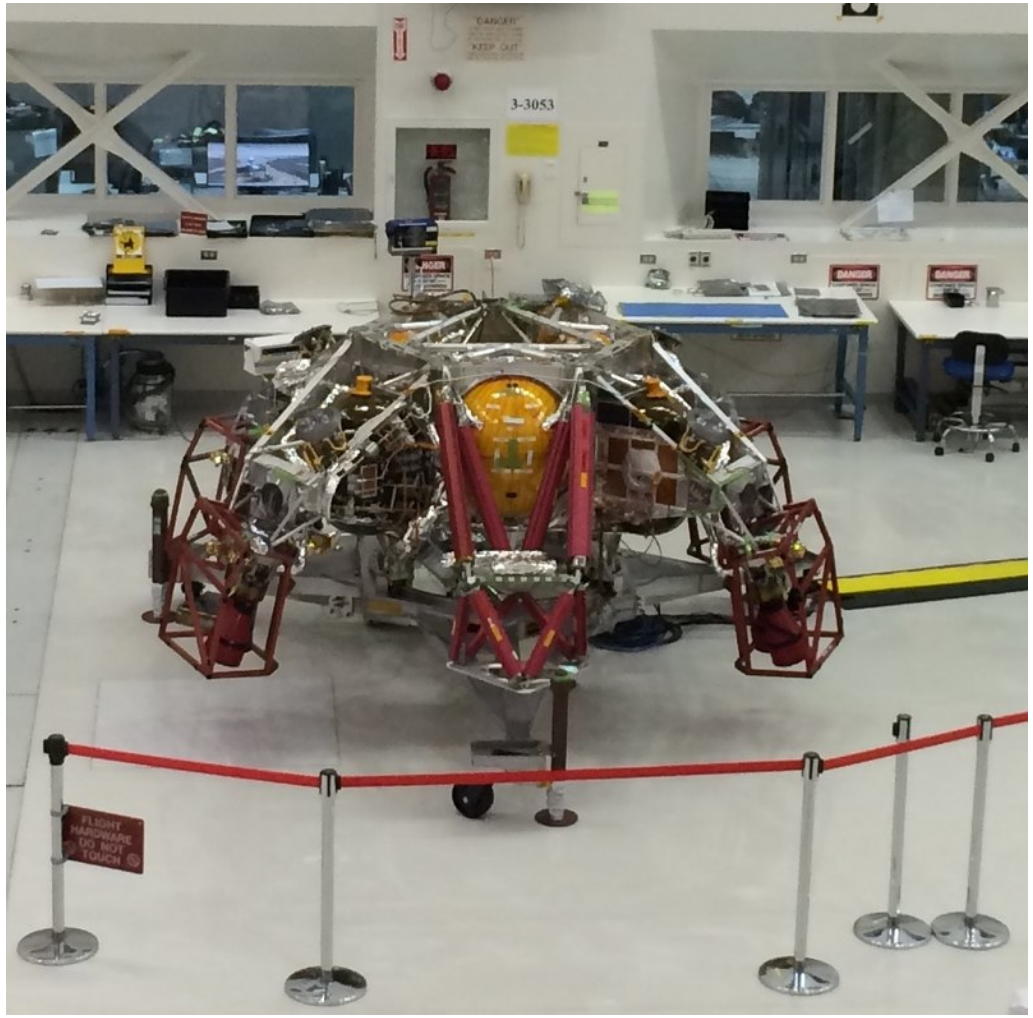


Mars Oxygen ISRU Experiment (MOXIE), an exploration technology investigation that will produce a small amount of oxygen (O2) from Martian atmospheric carbon dioxide (CO2)

Comparisons with Curiosity Rover – Same Size



Comparisons with Curiosity Rover – Same cruise and EDL



EDL Timeline

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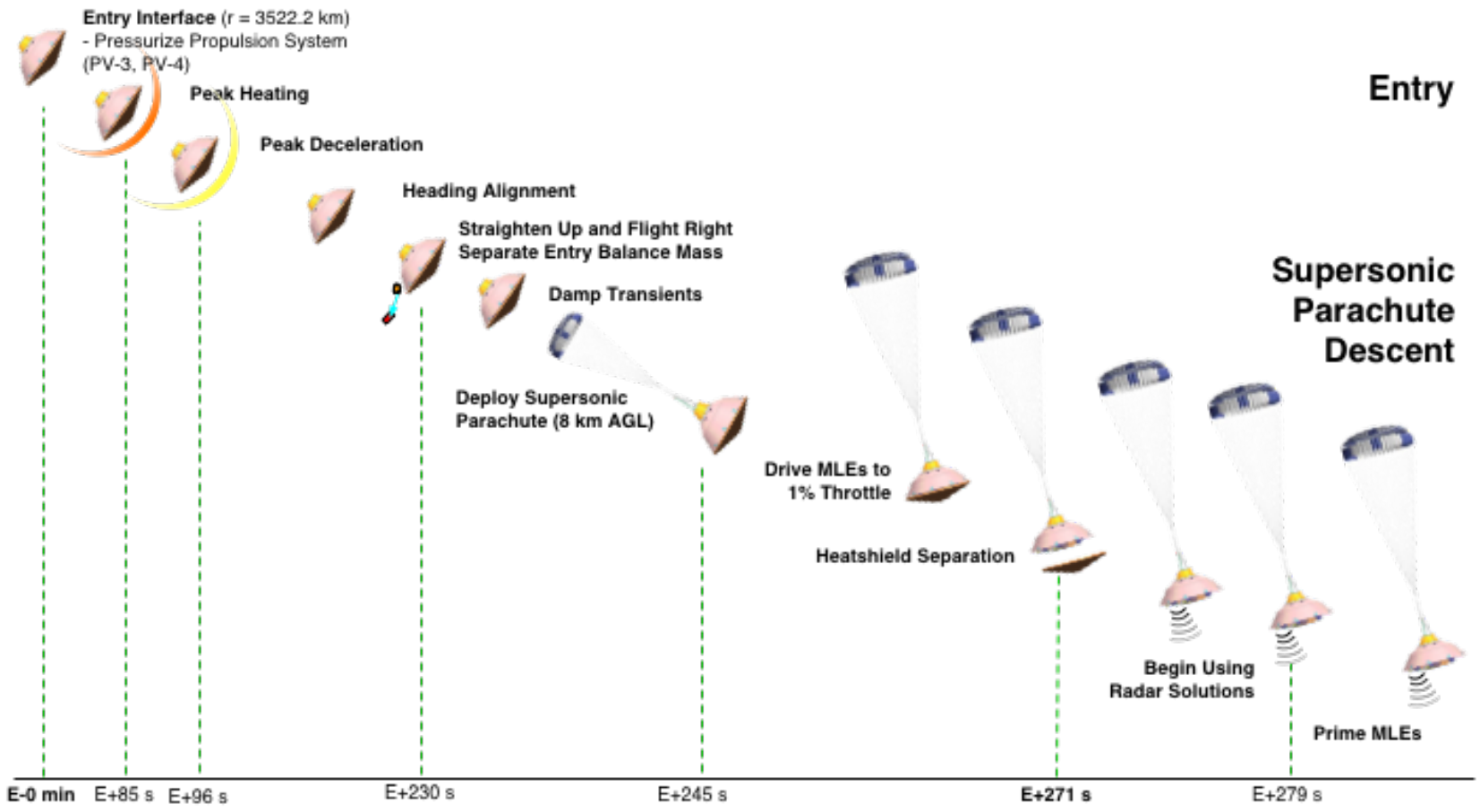

EDL Timeline

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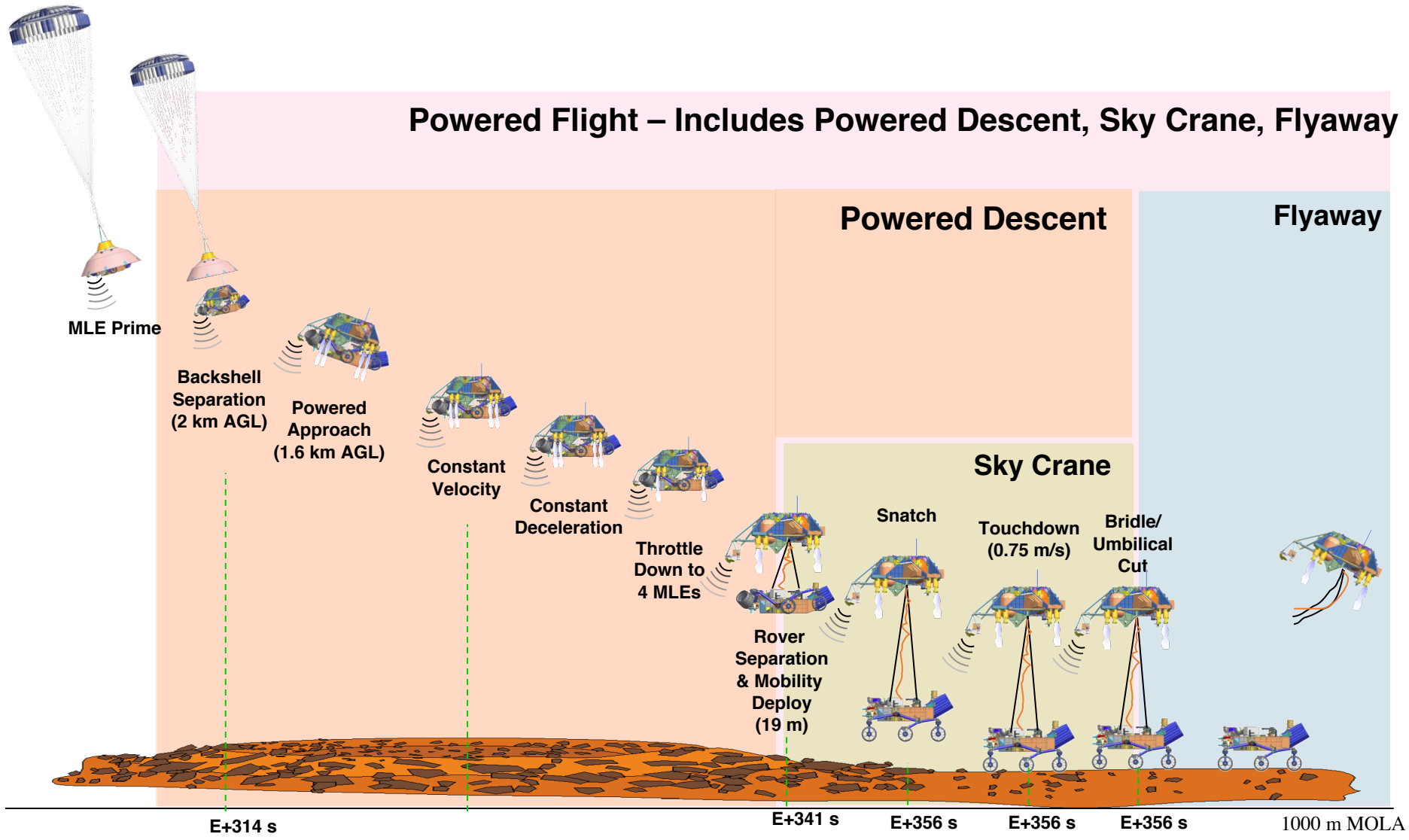

Ground System for M2020

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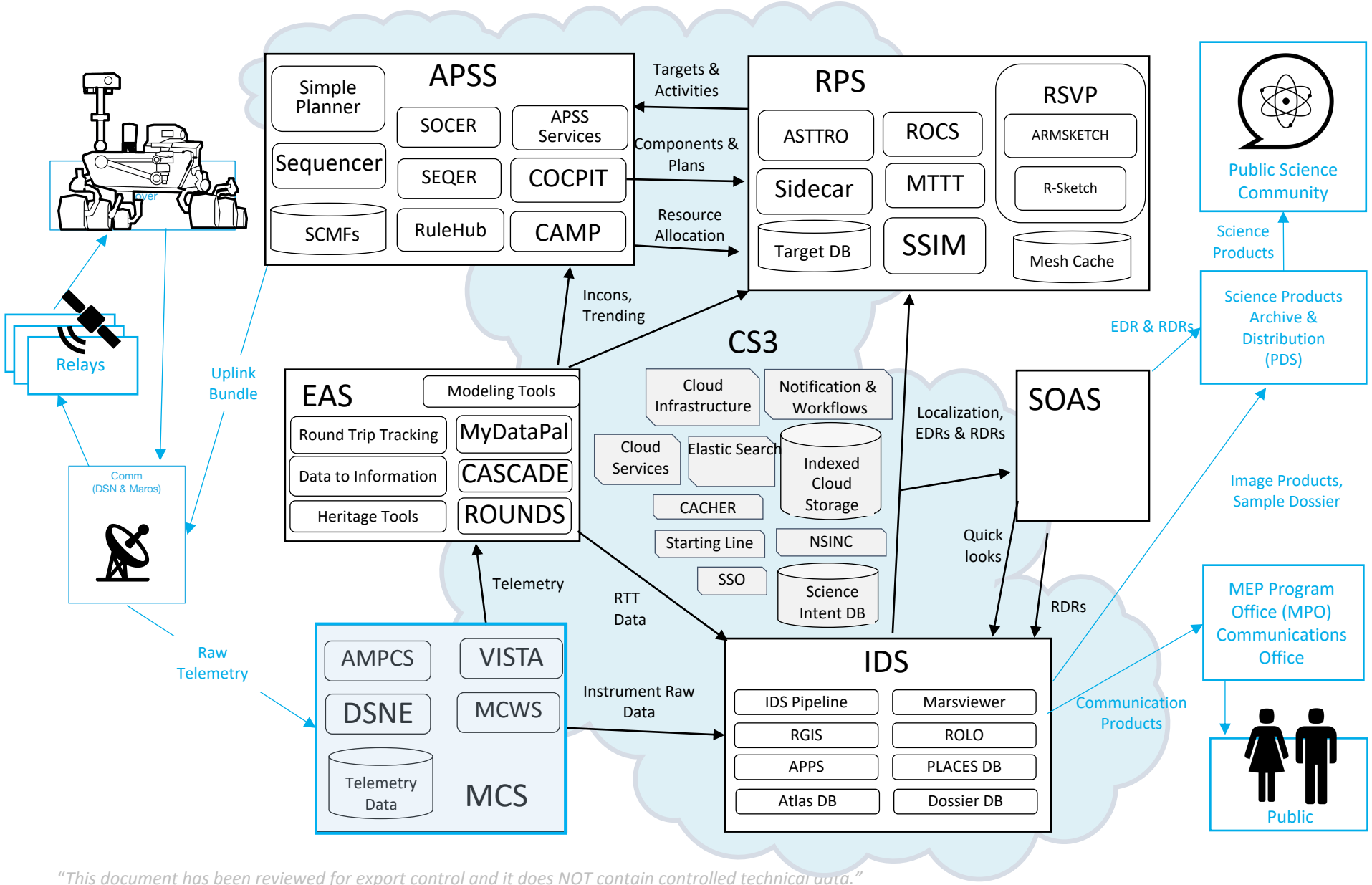

Mission Control System for M2020

Testbed Downlink Dataflow

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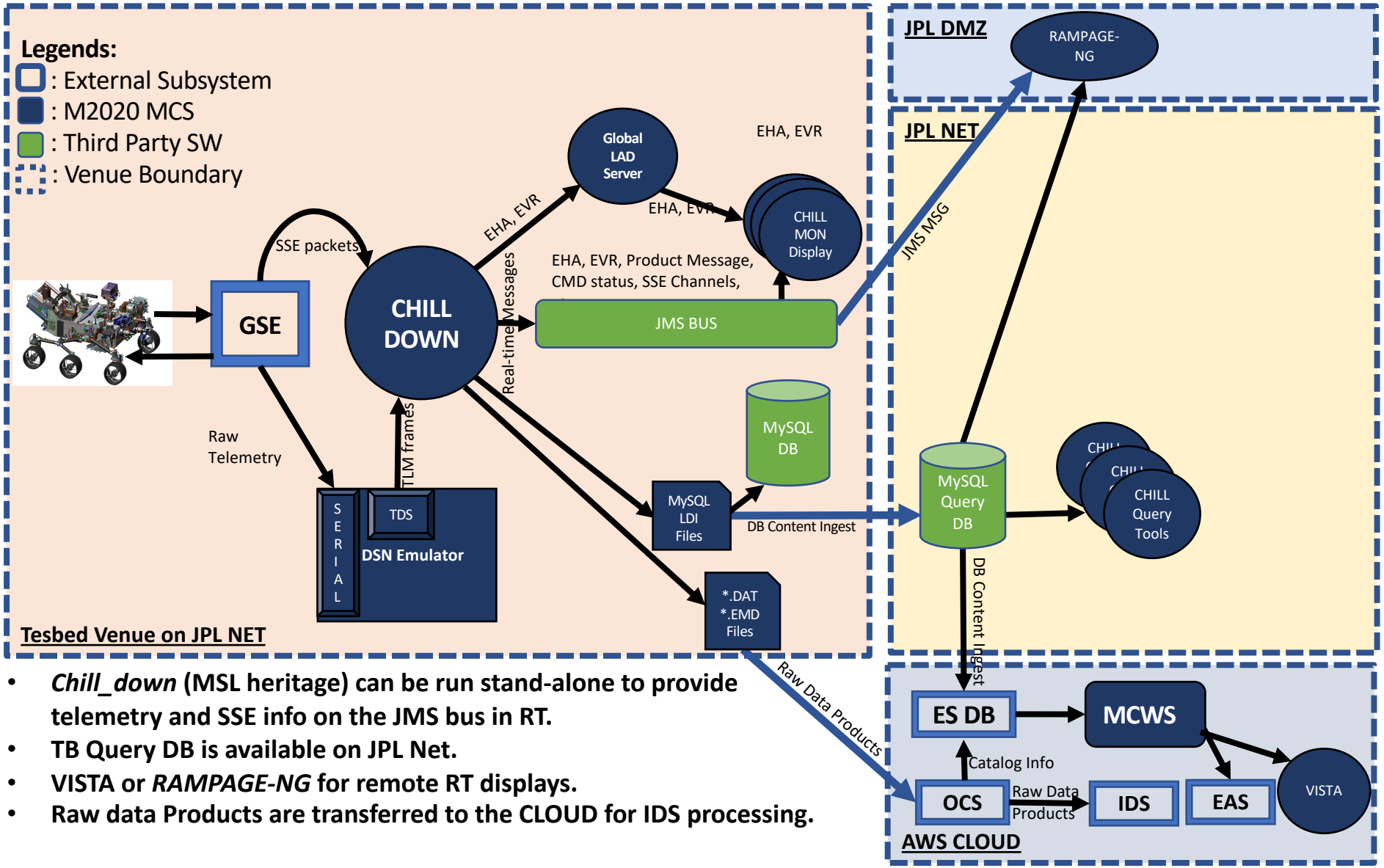

- ***Chill_down*** **(MSL heritage) can be run stand-alone to provide telemetry and SSE info on the JMS bus in RT.**
- **TB Query DB is available on JPL Net.**
- **VISTA or *RAMPAGE-NG* for remote RT displays.**
- **Raw data Products are transferred to the CLOUD for IDS processing.**

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ATLO Downlink Dataflow

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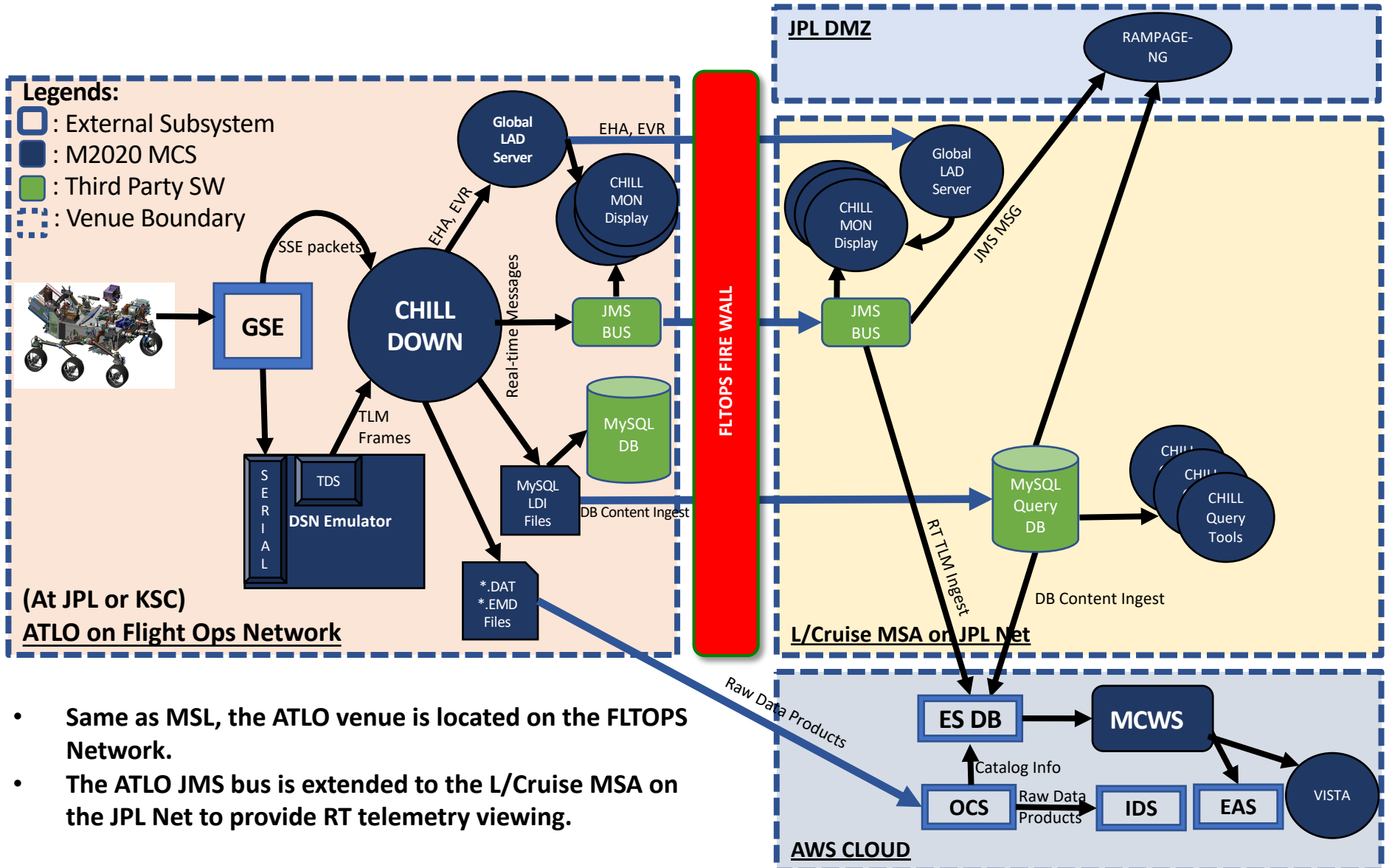

- **Same as MSL, the ATLO venue is located on the FLTOPS Network.**
- **The ATLO JMS bus is extended to the L/Cruise MSA on the JPL Net to provide RT telemetry viewing.**

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Launch/Cruise/Approach/EDL Primary MSA

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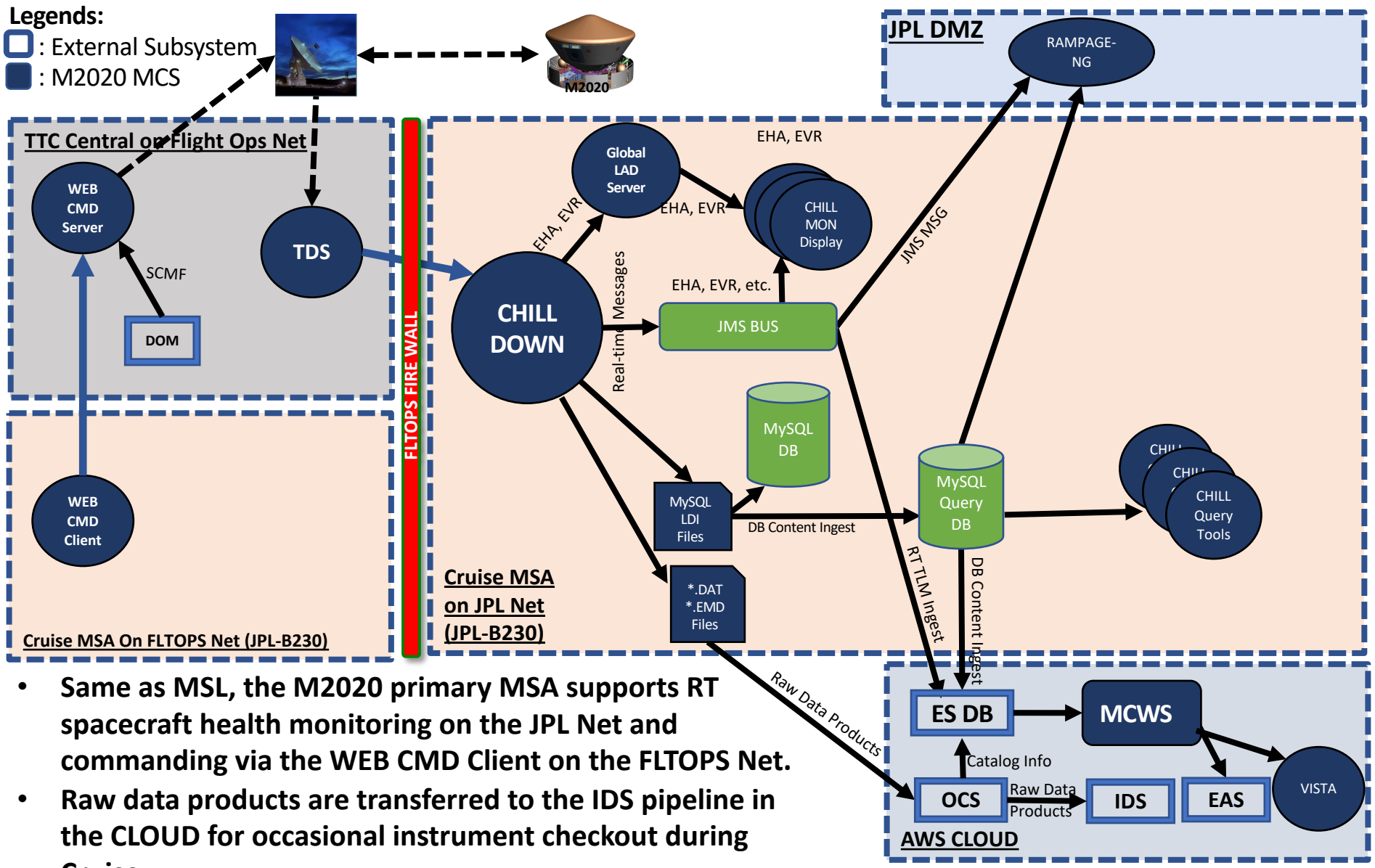

- **Same as MSL, the M2020 primary MSA supports RT spacecraft health monitoring on the JPL Net and commanding via the WEB CMD Client on the FLTOPS Net.**
- **Raw data products are transferred to the IDS pipeline in the CLOUD for occasional instrument checkout during Cruise**

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Surface Uplink/Downlink Dataflow

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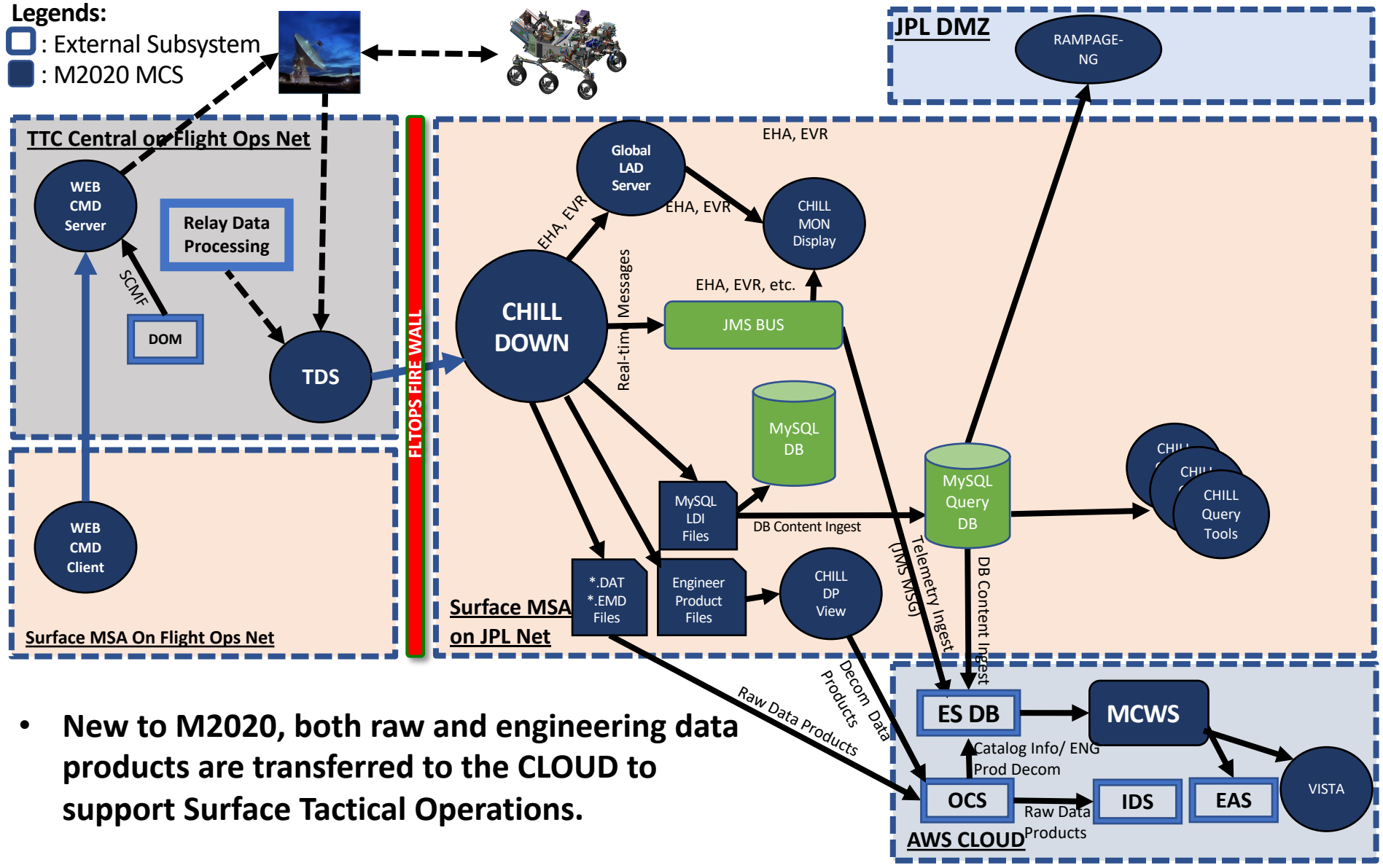

- **New to M2020, both raw and engineering data products are transferred to the CLOUD to support Surface Tactical Operations.**